

What is Claimed is:

1. A behavior controlling apparatus for controlling the behavior of a mobile robot apparatus, said behavior controlling apparatus comprising:

landmark recognition means for recognizing a plurality of landmarks arranged discretely;

landmark map building means for integrating the locations of said landmarks recognized by said landmark recognition means for building a landmark map based on the geometrical topology of said landmarks;

mobility area recognition means for building a mobility area map, indicating the mobility area where the mobile robot apparatus can move, from said landmark map built by said landmark map building means; and

behavior controlling means for controlling the behavior of said mobile robot apparatus using the mobility area map built by said mobility area recognition means.

2. The behavior controlling apparatus according to claim 1 wherein said landmark map building means integrates the landmark information recognized by said landmark recognition means and the odometric information of the robot apparatus itself to estimate the geometric positions of said landmarks and outputs said geometric positions as a landmark map.

3. The behavior controlling apparatus according to claim 1 wherein said behavior controlling means adds said mobility area map as a virtual obstacle in an obstacle

map of the environment around said robot apparatus and controls the behavior of said robot apparatus so that said robot apparatus will move only in an area determined to be a free area in said obstacle map.

4. A behavior controlling method for controlling the behavior of a mobile robot apparatus, said behavior controlling method comprising:

- a landmark recognition step of recognizing a plurality of landmarks arranged discretely;

- a landmark map building step of integrating the locations of said landmarks recognized by said landmark recognition step for building a landmark map based on the geometrical topology of said landmarks;

- a mobility area recognition step of building a mobility area map, indicating the mobility area where the mobile robot apparatus can move, from said landmark map built by said landmark map building means; and

- a behavior controlling step of controlling the behavior of said mobile robot apparatus using the mobility area map built by said mobility area recognition means.

5. A behavior controlling program run by a mobile robot apparatus for controlling the behavior of said mobile robot apparatus, said behavior controlling program comprising:

- a landmark recognition step of recognizing a plurality of landmarks arranged discretely;



behavior controlling means for controlling the behavior of said mobile robot apparatus using the mobility area map built by said mobility area recognition means.

7. The mobile robot apparatus according to claim 6 wherein

said landmark map building means integrates the landmark information recognized by said landmark recognition means and the odometric information of the robot apparatus itself to estimate the geometric positions of said landmarks and outputs said geometric positions as a landmark map.

8. The mobile robot apparatus according to claim 6 wherein

said behavior controlling means adds said mobility area map as a virtual obstacle in the obstacle map of the environment around said robot apparatus and controls the behavior of said robot apparatus so that said robot apparatus will move only in an area determined to be a free area in said obstacle map.